

Data Transformation and Visualization

✅ Data Transformation in Power Query

Open the dataset in **Power BI** and use Power Query to clean and transform the data:

1. Remove Unnecessary Columns

- Remove RowNumber and Surname (not relevant for analysis).

2. Rename Columns

- Make column names more readable:
 - CreditScore → Credit Score
 - NumOfProducts → Number of Products
 - HasCrCard → Has Credit Card
 - IsActiveMember → Active Member
 - EstimatedSalary → Estimated Salary

3. Data Type Conversion

- Convert data types where necessary:
 - CustomerId → Text
 - Credit Score, Age, Tenure, Balance, Number of Products, Estimated Salary → Whole Number/Decimal
 - Exited → Binary (0 or 1)

4. Handle Missing Values

- Fill missing values with defaults or drop rows with excessive missing data.

5. Create Custom Columns

- Create new calculated columns:
 - **Age Group** → Create using if-else conditions:
 - 18-25 → "Young"
 - 26-35 → "Adult"
 - 36-50 → "Middle-aged"
 - 51+ → "Senior"
 - **Balance Status** → Create a column to classify balance status:

- Balance = 0 → "Zero Balance"
- Balance > 0 → "Active Balance"
- **Retention Status** → Based on Exited column:
 - 0 → "Retained"
 - 1 → "Churned"

6. Transform Binary Data to Labels

- Convert Gender, Exited, Active Member, and Has Credit Card to descriptive labels:
 - 1 → "Yes"
 - 0 → "No"

Visualization Ideas in Power BI

Use the transformed data to create the following visualizations:

1. Churn Rate Overview

Chart Type: Donut Chart

- Display the percentage of customers who have exited (Exited) vs retained.

2. Churn Rate by Geography

Chart Type: Stacked Column Chart

- X-axis → Geography
- Y-axis → Count of Customers
- Grouping → Exited (Yes/No)

3. Credit Score Distribution

Chart Type: Histogram

- X-axis → Credit Score
 - Y-axis → Number of Customers
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4. Balance vs. Credit Score

→ **Chart Type:** Scatter Plot

- X-axis → Credit Score
 - Y-axis → Balance
 - Color → Exited (Yes/No)
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5. Customer Retention by Age Group

→ **Chart Type:** Clustered Column Chart

- X-axis → Age Group
 - Y-axis → Count of Customers
 - Grouping → Exited
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6. Churn by Number of Products

→ **Chart Type:** Stacked Bar Chart

- X-axis → Number of Products
 - Y-axis → Count of Customers
 - Color → Exited
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7. Active Members and Churn Rate

→ **Chart Type:** Stacked Bar Chart

- X-axis → Active Member
 - Y-axis → Count of Customers
 - Color → Exited
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8. Balance Status vs Geography

→ **Chart Type:** Stacked Column Chart

- X-axis → Geography


- Y-axis → Count of Customers
 - Grouping → Balance Status
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9. Correlation Between Credit Score and Age

 **Chart Type:** Scatter Plot

- X-axis → Age
 - Y-axis → Credit Score
 - Color → Exited
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10. Gender-based Churn Rate

 **Chart Type:** Clustered Bar Chart

- X-axis → Gender
 - Y-axis → Count of Customers
 - Color → Exited
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Additional Tips

- ✓ Create a **Dashboard** combining the most important charts.
- ✓ Use **Filters** for Geography, Gender, Number of Products, and Age Group.
- ✓ Add **Drill-throughs** to explore detailed customer behavior.
- ✓ Create a **KPI Card** to display churn rate, average credit score, and balance.